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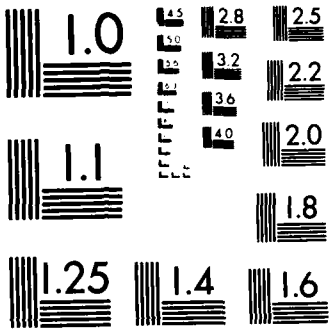

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Ada* Compiler Validation Summary Report: Data General Corporation, ADE Ada Compiler, Version 2.30.03.12, Eclipse DS/4000, DS/4200, MV/4000-DC, MV/8000-C, MV/8000-II, MV/10000, MV/10000 SX using AOS/VS 5.04 and AOS/RT32 4. 001.00

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Results and conclusions of standardized tests on the Data General Corporation ADE Ada Compiler

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ABSTRACT (Continue on reverse side if necessary and identify by block number)

The purpose of this Validation Summary Report is to present the results and conclusions of performing standardized tests on the Data General Corporation ADE Ada Compiler. On-site testing was performed between 29 April 1985 and 03 May 1985 at Data General Corporation headquarters, Westboro, MA, under the Auspices of an Ada Validation Facility (AVF), the Federal Software Testing Center, according to current Ada Validation Office (AVO) policies and procedures.

The Data General ADE Ada compiler is hosted on those systems listed in the table

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below. The hosts, as well as selected AKS/RT32 based systems served as the target systems, The suite of tests known as the Ada Compiler Validation Capability (ACVC), Version 1.5, was used. The ACVC suite of tests is used to validate conformance of the compiler to Reference Manual, January 1983. Not all tests ib the ACVC test suite are applicable to this specific implementation. Also, known test errors in Version 1.5 are present in some tests; these tests were withdrawn. The purpose of the testing is to ensure that the compiler properly implements legal language comstructs and that it identifies, rejects from processing; and albals illegal constructs.

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The following table represents the validated target/host relationships:

CPU TYPE	HOST OPERATING SYSTEM	TARGET OPERATING SYSTEMS	
DS/4000	AOS/VS	AOS/VS	---------
DS/4200	AOS/VS	AOS/VS	---------
MV/4000-DC	AOS/VS	AOS/VS	---------
MV/4000	AOS/VS	AOS/VS	AOS/RT32
MV-8000-C	AOS/VS	AOS/VS	---------
MV/8000II	AOS/VS	AOS/VS	AOS/RT32
MV/10000	AOS/VS	AOS/VS	AOS/RT32
MV/10000SX	AOS/VS	AOS/VS	AOS/RT32

Ada* COMPILER VALIDATION SUMMARY REPORT:

Data General Corporation
ADE Ada Compiler
Version 2.30.03.12
Eclipse DS/4000, DS/4200,
MV/4000-DC, MV/4000,
MV/8000-C, MV/8000-II, MV/10000,
MV/10000 SX
using AOS/VS 5.04 and
AOS/RT32 4.001.00.

May 18, 1985

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(Ada Joint Program Office).

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ABSTRACT

The purpose of this Validation Summary Report is to present the results and conclusions of performing standardized tests on the Data General Corporation ADE Ada Compiler. On-site testing was performed between 29 April 1985 and 03 May 1985 at Data General Corporation headquarters, Westboro, Massachusetts, under the auspices of an Ada Validation Facility (AVF), the Federal Software Testing Center, according to current Ada Validation Office (AVO) policies and procedures.

The Data General ADE Ada Compiler is hosted on those systems listed in the table below. The hosts, as well as selected AOS/RT32 based systems served as the target systems. The suite of tests known as the Ada Compiler Validation Capability (ACVC), Version 1.5, was used. The ACVC suite of tests is used to validate conformance of the compiler to ANSI/MIL-STD-1815A (Ada). This standard is described in the ANSI Ada Reference Manual, January 1983. Not all tests in the ACVC test suite are applicable to this specific implementation. Also, known test errors in Version 1.5 are present in some tests; these tests were withdrawn. The purpose of the testing is to ensure that the compiler properly implements legal language constructs and that it identifies, rejects from processing, and labels illegal constructs.

The Data General Corporation (DGC) Compiler ADE Ada, version 2.30.03.12, using AOS/VS Version 5.04 and AOS/RT Version 4.01, was tested with RT32 version 1.5 of the ACVC validation tests. Version 1.5 of the test suite contains 2050 tests, of which 1813 were applicable to this implementation. Of the applicable tests, 66 were withdrawn due to errors in the tests. Of the remaining applicable correct tests, 1813 passed.

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MV/4000-DC	AOS/VS	AOS/VS	--------
MV/4000	AOS/VS	AOS/VS	AOS/RT32
MV/8000-C	AOS/VS	AOS/VS	--------
MV/8000II	AOS/VS	AOS/VS	AOS/RT32
MV/10000	AOS/VS	AOS/VS	AOS/RT32
MV/10000SX	AOS/VS	AOS/VS	AOS/RT32

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1. Introduction

1.1 Purpose of the Validation Summary Report

This report describes the results of the validation testing for the compiler designated as ADE Ada, Version 2.30.03.12 on the following configurations:

Host Machines:	DS/4000, DS/4200, MV/4000-DC, MV/4000, MV/8000-C, MV/8000 II, MV/10000, MV/10000 SX using AOS/VS only.
Operating System:	AOS/VS 5.04.
Host Disk System:	6236 and 6237
Target Machines:	DS/4000, DS/4200, MV/4000-DC, MV/8000-C, (*) MV/4000, MV/8000-C, MV/8000 II, MV/10000, MV/10000 SX (*)
Operating System:	AOS/VS 5.04 and AOS/RT32 4.01 noted by (*).
Language Version:	ANSI/MIL-STD-1815A Ada
Translator Name:	ADE Ada
Validation Test Version:	1.5

Testing of this compiler was conducted by the Federal Software Testing Center under the supervision of the Ada Validation Office (AVO), at the direction of the Ada Joint Program Office. Testing was conducted from April 29, 1985, through May 3, 1985, at Data General Corporation, Westboro, MA, in accordance with AVO policies and procedures.

The purpose of this report is to document the results of the testing performed on the compiler, and in particular, to:

- identify any language constructs supported by the compilers that do not conform to the Ada standard;
- identify any unsupported language constructs required by the Ada standard; and
- describe implementation-dependent behavior allowed by the standard.

1.2 Use of the Validation Summary Report

The Ada Validation Office may make full and free public disclosure of this report in accordance with the "Freedom of Information Act" (5 U.S.C. #552). The results of the validation apply only to the computers, operating systems, and compiler version identified in this report.

The Ada Compiler Validation Capability is used to determine insofar as is practical, the degree to which the subject compiler conforms to the Ada standard. Thus, this report is necessarily discretionary and judgemental. The United States Government does not represent or warrant that the statements, or any one of them, set forth in this report are accurate or complete, nor that the subject compiler has no other nonconformances to the Ada standard. This report is not meant to be used for the purpose of publicizing the findings summarized herein.

Any questions regarding this report or the validation tests should be sent to the Ada Validation Office at:

Ada Joint Program Office
1211 Fern Street
C-107
Arlington, VA 22202

1.3 References

Reference Manual for the Ada Programming Language, ANSI/MIL-STD-1815A, February 1983.

Ada Validation Organization: Policies and Procedures, Mitre Corporation, June 1982, PB 83-110601.

Ada Compiler Validation Implementers' Guide, SofTech, Inc., October 1980.

The Ada Compiler Validation Capability, Computer, Vol. 14, No. 6, June 1981.

Using the ACVC Tests, SofTech, Inc. November 1981.

Ada Compiler Validation Plans and Procedures, SofTech, Inc. November 1981.

1.4 Definitions of Terms

Class A tests are passed if no errors are detected at compile time. Although these tests are constructed to be executable, no checks can be performed at run-time to see if the test objective has been met; this distinguished Class A from Class C tests. For example, a Class A test might check that keywords of other languages (other than those already reserved in Ada) are not treated as reserved words by an Ada implementation.

Class B tests are illegal programs. They are passed if all the errors they contain are detected at compile-time (or link-time) and no legal statements are considered illegal by the compiler.

Class L tests consist of illegal programs whose errors cannot be detected until link time. They are passed if errors are detected prior to beginning execution of the main program.

Class C tests consist of executable self-checking programs. They are passed if they complete execution and do not report failure.

Class D tests are capacity tests. Since there are no firm criteria for the number of identifiers permitted in a compilation, number of units in a library, etc., a compiler may refuse to compile a class D test. However, if such a test is successfully compiled, it should execute without reporting a failure.

Class E tests provide information about an implementation's interpretation of the Standard. Each test has its own pass/fail criterion.

ACVC: Acronym for the Ada Compiler Validation Capability.

AVO: The Ada Validation Office. In the context of this report the AVO is responsible for directing compiler validation.

CHECK or CHECKTEST: An automated tool defined by the FSTC and developed by the AVF that produces summary test results by reading compiler output in a spool file. This tool is available on the ACVC distribution tapes from the AVF.

CUSTOMER: The agency requesting the validation (Data General Corporation).

FSTC:	Federal Software Testing Center. In the context of this report the FSTC conducts Ada validations under contract to the AVO as a satellite facility.
HOST:	The computer on which the compiler executes (DS/4000, DS/4200, MV/4000-DC, MV/4000, MV/8000-C, MV/8000 II, MV/10000, MV/10000 SX)
IG:	ACVC Implementers' Guide.
RM:	The Ada Language Reference Manual.
STANDARD:	The standard for the Ada language, ANSI/MIL-STD-1815A.
SUBSET TESTS:	A grouping of 65 ACVC tests selected by the FSTC. Each chapter in the ACVC is represented in the subset by between 4 to 7 tests. The subset is used for statistical sampling of the various host and target hardware configurations.
TARGET:	The computer for which the compiler generates object code (DS/4000, DS/4200, MV/4000-DC, MV/4000, MV/8000-C, MV/8000 II, MV/10000, MV/10000 SX.)
VALIDATION:	The process of testing a compilation system to certify that it conforms to the standard.
VALIDATION TESTS:	The set of test programs used to detect non-conformances in compilation systems. In this report, the term will be used (unqualified) to mean the ACVC tests.

2. TEST ANALYSIS

The following table shows that the DGC ADE Ada compiler passed all applicable tests.

	A	B	C	D	E	L	Support	Total
Processed	58	753	1206	14	7	9	3	2050
Inapplicable	1	9	158	3	0	0	0	171
Withdrawn	0	1	70	0	0	0	0	71
Passed	57	743	978	11	7	9	3	1808
Failed	0	0	0	0	0	0	0	0

171 tests in the suite were found to be not applicable to the DGC implementation.

In addition, 71 tests were withdrawn from the test suite because they were incorrect programs.

2.1 Class A Testing

Class A tests check that legal Ada programs can be successfully compiled. These tests are executed but contain no executable self-checking capabilities. There were 58 class A test programs processed in this validaton.

2.1.1 Class A Test Procedures

Each class A test was separately compiled and executed. However, the only purpose of execution is to produce a message indicating that the test passed.

2.1.2 Class A Test Results

Successful compilation and execution without any error messages indicates the tests passed. All 57 applicable tests passed.

2.2 Class B Testing

Class B tests check the ability to recognize illegal language usage. There were 743 applicable class B tests processed.

2.2.1 Class B Test Procedures

Each Class B test was separately compiled. The resulting test compilation listings are manually examined to see whether every illegal construct in the test is detected. If some errors are not detected, a version of the program test is created that contains only undetected illegal constructs.

This revised version is recompiled and the results analyzed. If some errors are still not detected, the revision process is repeated until a revised test contains only a single previously undetected illegal construct.

A B test is considered to fail only if a version of the test containing a single illegal construct is accepted by the compiler (i.e., an illegal construct is not detected) or a version containing no errors is rejected (i.e., a legal construct is rejected).

2.2.2 Class B Test Results

There were 753 class B tests presented to the compiler. Of these tests 9 were found to be inapplicable to this implementation (see Section 4.2.7); 1 test was found to be incorrect (i.e., a conforming compiler would have failed each of these tests). All 743 remaining class B tests passed.

Because all errors were not detected when compiling the original tests, the following 19 tests were modified by removing the detected errors; the modified tests were then resubmitted to see if the remaining errors would be detected.

B26005A.ADA	B26005AA0.ADA	B26005AA1.ADA	B26005AA2.ADA
B26005AA3.ADA	B44001AA0_B.ADA	B44001A_B.ADA	B64004A.ADA
B64004AA0.ADA	B67001AA0_B.ADA	B67001AA1_B.ADA	B67001A_B.ADA
B97101AA0_AB.ADA	B97101AA1_AB.ADA	B97101AA2_AB.ADA	B97101A_AB.ADA
B97101EA0_AB.ADA	B97101EA1_AB.ADA	B97101E_AB.ADA	

All illegal constructs were eventually detected except in some tests that were withdrawn because of errors in the tests (see Section 4.2.8).

2.3 Class C Testing

Class C tests check that legal Ada programs are correctly compiled and executed by an implementation. There were 983 class C tests processed in this validation attempt.

2.3.1 Class C Test Procedures

Each Class C test is separately compiled and executed. The tests are self-checking and produce PASS/FAIL messages. Any 'failed' tests are individually checked to see if they are correct and if they are applicable to the implementation. Any tests that are inapplicable or that do not conform to the Ada Standard are withdrawn.

2.3.2 Class C Test Results

All class C tests were processed except those tests requiring a floating point precision exceeding SYSTEM.MAX_.DIGITS.

2.4 Class D Testing

Class D tests are executable tests used to check an implementation's compilation and execution capacities. There were 11 class D tests used in this validation.

2.4.1 Class D Test Procedures

Each class D test is separately compiled and executed. The tests are self-checking and produce PASS/FAIL messages.

2.4.2 Class D Test Results

Of the 11 applicable class D tests, 11 passed and 3 were found to be inapplicable to this implementation. Of these 3 were withdrawn because of errors in the tests. See section 4.2.7 for further information.

2.5 Class E Testing

Class E tests are executable tests that provide information about an implementation's interpretation of the Standard in areas where the Standard permits implementations to differ. Each test has its own pass/fail criterion. There were 7 class E tests used in this validation.

2.5.1 Class E Test Results

All class E test results passed.

2.6 Class L Testing

Nine Class L tests check that incomplete or illegal Ada programs involving multiple separately compiled source files are detected at link time and are not allowed to execute. There were 9 Class L test programs processed in this validation attempt.

2.6.1 Class L Test Procedures

Each Class L test is separately compiled and execution is attempted. The tests produce FAIL messages if executed. Any "failed" tests are individually checked to see if they are correct and if they are applicable to the implementation. Any tests that are inapplicable or that do not conform to the Ada standard are withdrawn.

2.6.2 Class L Test Results

Of the 9 class L tests, none were found to be inapplicable to this implementation, and none were withdrawn due to errors in the tests. All nine L tests passed.

2.6.3 Subset Testing

A subset of the executable ACVC tests were defined by the FSTC and used during the DGC 1985 Ada validation. This subset of tests was used to establish the evaluation of multiple configuration combinations during the pre-validation and during the on-site validation. The subset consisted of the following tests:

Chapter 2	Chapter 3	Chapter 4	Chapter 5
C23001A	C34001A	C41101D	C51002A
C24102A	C34001H	C42005A	C52001A
C26008A	A32203D	C43214A	C53005A
A29002A	C35904A	C45101A	C54A03A
	C36204A	C48003A	D55A03A
	C34002B		

Chapter 6	Chapter 7	Chapter 8	Chapter 9
C61003B	A71002A	A83A02A	C92002A
A62006D	C72001B	C84002A	C93001A
C63004A	C74203B	C85007E	C94006A
C65003A	C74209A	C86003A	A97106A
C66002A	C74409B	C87B48A	C97202A

Chapter 10	Chapter 11	Chapter 12	Chapter 14
CA1003A	CB1001A	CC1004A	AE2101A
CA2004A0M	CB2004A	CC3004A	CE2102A
CA2004A1	CB3003A	CC3408A	CE2201A
CA2004A2	CB4001A	CC3504C	CE2401E
			CE3102A
			CE3901A

*** CZ ***

CZ1101A
CZ1102A
CZ1103A
CZ1201A
CZ1201B
CZ1201C
CZ1201D

3. COMPILER ANOMALIES AND NONCONFORMANCE

There were no nonconformances to the Ada standard detected in this validation. The compiler passed all applicable correct tests.

4. ADDITIONAL INFORMATION

This section describes in more detail how the validation was concluded.

4.1 Compiler Parameters

Certain tests do not apply to all Ada compilers, e.g., compilers are not required to support several predefined floating point types, and so tests must be selected based on the predefined types an implementation actually supports. In addition, some tests are parameterized according to the maximum length allowed by an implementation for an identifier (or other lexical element; this is also the maximum line length), the maximum floating point precision supported, etc. The implementation dependent parameters used in performing this validation were:

- maximum lexical element length: 120 characters.
- maximum digits value for floating point types: 15
- SYSTEM.MIN_INT: -2147483648
- SYSTEM.MAX_INT: 2147483647
- predefined numeric types: INTEGER, FLOAT.
- INTEGER'FIRST: -2147483648
- INTEGER'LAST: 2147483647
- source character set: ASCII
- extended ascii chars: abcdefghijklmnopqrstuvwxyz !$%?[\]^'{} ";
- non-ascii char type: (NON_NULL)
- TEXT_IO.COUNT'LAST: 2147483646
- TEXT_IO.FIELD'LAST: 2147483646
- illegal external file name1: "bad-character*^"
- illegal external file name2: "much_much_too_long_name_for_a_file"
- SYSTEM.PRIORITY'FIRST: 1
- SYSTEM.PRIORITY'LAST: 10

4.2 Testing Information

Tests were compiled/executed at Data General Corporation, Westboro, MA.

4.2.1 Pre-Test Procedures

Prior to testing, appropriate values for the compiler-dependent parameters were determined. These values were used to adapt tests that depend on the values. A magnetic tape containing the adapted tests [and split versions of some class B tests (see section 2.2.2)] was prepared and brought to the testing site.

The Data General Pre-validation consisted of the following procedures:

a) All applicable ACVC tests were compiled, linked and executed on the MV/10000 running AOS/VS.

b) All applicable binaries produced from step a were then executed on the MV10000 running AOS/RT32.

c) All applicable binaries produced from step a were then transported to the MV8000II, running under AOS/VS and executed.

d) All applicable binaries produced from step a were then executed on the MV8000II under AOS/RT32.

e) All applicable binaries produced from step a were then transported to the DS/4000, DS4200, MV4000DC, MV4000, MV8000C and the MV10000SX running under AOS/VS and AOS/RT32.

f) A subset of the ACVC tests (see 2.6.3) were compiled and linked on the MV10000SX, MV8000C, MV4000, DS4000, DS4200 and MV4000DC running AOS/VS.

All tests results were analyzed against the base compiler results and no differences were detected.

4.2.2 Control Files

Data General Corporation provided command procedures that compiled and executed tests automatically.

4.2.3 Test Procedures

All files from the version 1.5 tape were read onto disk. The package REPORT and the procedure CHECK-FILE were first compiled and the corresponding library file saved. The tests checking the REPORT package and CHECK-FILE procedure were executed on the MV/10000. Then all tests were grouped into batch jobs by class and by chapter and run on the MV/10000. The MV10000 under AOS/VS was determined, through mutual agreement, to be the base configuration whose results would be used as a baseline for comparison of results from all other hardware systems under both AOS/VS and AOS/RTE.

All applicable results were correct from the MV10000 under AOS/VS, thereby establishing it as a valid base configuration system for further comparison of other results.

All applicable executable modules were processed on the MV/10000 under AOS/VS successfully and then transported into the AOS/RT32 environment on the MV/10000 for execution. All applicable executable modules processed successfully under AOS/RT32 on the MV/10000.

All applicable executable modules were then transported on magnetic tape to the MV/4000 running under AOS/VS. All applicable modules executed successfully under AOS/VS and AOS/RT32 on the MV/4000. All results were checked and were determined to be identical to those executable results produced on the MV/10000 under AOS/VS.

A complete ACVC minus the B tests were also executed on the MV/8000II under AOS/VS. All results were checked and found to be identical to those from the MV/10000.

All applicable executable modules were processed on the MV/8000II AOS/VS successfully and then transported into the AOS/RT32 environment on the MV/8000II for execution. All applicable executable modules processed successfully under AOS/RT32 on the MV/8000II. All results were checked and found to be identical to those from the MV/10000.

Additional subset testing was performed under 3 AOS/VS configurations, the MV10000 SX, MV4000 and MV8000II. The subset of ACVC tests were successfully processed on the MV10000 SX. The subset was compiled and executed on the MV4000 and the MV4000 executables were then transported to the MV8000II where they executed successfully.

4.2.4 Test Analysis Procedures

On completion of testing, all results were analyzed for failed Class A, C, D, E, or L programs, and all class B compilation results were individually analyzed. Analysis procedures are described for each test class in chapter 2.

4.2.5 Timing Information

The real (i.e., wall clock) time required for running all the tests on the Eclipse MV/10000 was approximately 32 hours and 51 minutes.

The real (i.e., wall clock) time required for running all the executable tests on the MV/4000 target was approximately 44 hours and 53 minutes.

4.2.6 Description of Errors in Withdrawn Tests

The following tests in version 1.5 of the ACVC did not conform to the ANSI Ada standard and were withdrawn for the reasons given below:

- B66001A-B: Test checks (in section G) that a parameterless function that is equivalent to an enumeration literal in the same declarative region is a redeclaration and, as such, is forbidden. According to RM 8.3(17), the explicit declaration of such a function is allowed if an enumeration literal is considered to be an implicitly declared predefined operation. The RM is not clear on this point. This issue has been referred to the Language Maintenance Committee for resolution. Since the issue cannot be resolved at this time, the test is withdrawn from Version 1.5. (Please note that this test may be considered correct and may appear in the future Versions of the ACVC, including Version 1.6.)

- C38104A-B: An incomplete type with discriminants was constrained before its full declaration occurred. An implementation is allowed to reject such subtype indications because of an ambiguity in the language.

- C43103B-B: A non-null range had a bound that was outside the index subtype.

- C43206A-B, C43207A-B, C43207B-B, C43214A-B: CONSTRAINT ERROR is raised if one dimension of a multidimensional aggregate has non-null bounds that do not belong to the index subtype, even if the aggregate specifies a null array.

- C45321*-B., C45521*-B: Incorrect values were used for values assigned to variables having a floating point subtype.

- C52001B-AB: An equality comparison for nonmodel numbers (e.g., 23.4 = 23.4) has an implementation-defined value.

- C52007A-B: A comparison of INTEGER'LAST with SYSTEM.MAX INT will raise NUMERIC_ERROR if SYSTEM.MAX_INT exceeds INTEGER'LAST, since the implicit conversion of SYSTEM.MAX_INT to INTEGER will raise NUMERIC_ERROR.

- C52102A-AB, C52102B-AB: The result of concatenating slices of an array of characters had an upper bound that did not belong to the array's index subtype because the array was declared to have an index subtype 1..10 (or 1..9) instead of subtype INTEGER.

- C52103X-B: A test assumed that a slice would be performed even if it raised NUMERIC_ERROR.

- C55B15A-B: If SYSTEM.MAX___INT is greater than INTEGER'LAST, the discrete range INTEGER range -SYSTEM.MAX__INT + 10 .. -SYSTEM.MAX_INT will raise NUMERIC_ERROR.

- C87B10A-B: Literal values were used that were outside an integer based type for some implementations.

- B87B23B-B: A tricky case of overload resolution marked OK was actually ambiguous.

- C930BDA-B: An attempt to activate a task before its body is elaborated should raise TASKING__ERROR, not PROGRAM_ERROR.

- C95008A: It was possible for an entry call to call a terminated task, depending on the implementation.

- C95009A: An unintended race condition in a tasking test allowed a null access value to be deferenced before the access variable was assigned the access value of an allocated task.

- CE3103A-B: A test would print a failed message if RESET raised USE_ERROR.

- CE3804E-B: A test contained a nonmodel number for which an equality comparison was expected to always yield true.

4.2.7 Description of Inapplicable Tests

There were 3 tests that were not processed because SYSTEM.MAX DIGITS was 15. These tests were:

D4A002B D4A004A D4A004B.

Because the implementation did not support LONG_INTEGER, SHORT FLOAT, LONG___LONG___INTEGER, the following tests were inapplicable:

C24113L thru C24113Y inclusive

C34001E no LONG_INTEGER type
C34001F no SHORT_FLOAT type
C35702A no SHORT_FLOAT type
C35705L thru C35705Y inclusive

C35706L thru C35706Y inclusive

C35707L thru C35707Y inclusive

C35708L thru C35708Y inclusive

C35802L thru C35802Y inclusive

C45241L thru C45241Y inclusive

C45321L thru C45321Y inclusive

C45421L thru C45421Y inclusive

C45424L thru C45424Y inclusive

C45521L thru C45521Y inclusive

C45621L thru C45621Z inclusive

B52004D	no LONG_INTEGER type
B55B09C	no LONG_INTEGER type
C55B07A	no LONG_INTEGER type
C55B16A	Enumeration Representation Specification not supported

C55B16A-AB was inapplicable because it required support for explicitly specifying the representation of an enumeration type.

LA2004A*-AB and LA3004B*-B were inapplicable because they required support for the INLINE pragma.

AE2101C-B, CE2201D-B, CE2201E-B, and CE2401D-B were inapplicable because the implementation's version of SEQUENTIAL IO, DIRECT_IO, and TEXT_IO did not allow for instantiation with unconstrained array and record types.

CE2102D-B, CE2102E-B, CE2102F-B, and CE2102G-B were inapplicable because the implementation does not support modes IN__FILE, OUT__FILE, and INOUT__FILE, and also the procedures RESET and DELETE.

B86001D0M and B86001DT were inapplicable because the implementation does not support additional predefined data types.

CE3111B-B___DEP through CE3111E, CE3114B and CE3115A were inapplicable because the implementation's I/O is buffered by the operating system which does not permit opening the same physical file as two logical files.

AE2201D, BC3205F, CE2201O, CE2201E, CE2202A and CE2401D were imapplicable because unconstrained array I/O is not supported in the DGC implementation.

4.2.8 Information derived from the Tests

Processing of the following tests indicated support as described below for a variety of implementation options examined by the tests.

- E24101A-B.TST: If a based integer literal has a value exceeding SYSTEM.MAX__INT, an implementation may either reject the compilation unit at compile time or raise NUMERIC__ERROR at run time. This test showed that the DGC compiler rejects the compilation unit at compile time.

- B26005A.ADA: This test contains all the ASCII control characters in string literals. The system replaced the control characters corresponding to format effectors with a space in the listing file. All occurrences were identified with a diagnostic message by the DGC compiler.

- D29002K-B.ADA: This test declares 713 identifiers and was passed by the DGC compiler.

- E36202A-B.ADA and E36202B-B.ADA: These tests declare multidimensional null BOOLEAN arrays in which LENGTH of one dimension exceeds INTEGER'LAST and SYSTEM.MAX_INT, respectively. An implementation can accept this, or it can raise NUMERIC__ERROR or STORAGE_ERROR at run time. The Data General compiler did accept the declarations and raised NUMERIC_ERROR during execution.

- D4A002A-AB.ADA and D4A002B.ADA: These tests contain universal integer calculations requiring 32 and 64 bits of accuracy, i.e., values that exceed SYSTEM.MAX_INT are used. An implementation is allowed to reject programs requiring such calculations. The DGC compiler passed all four tests.

- E43211B-B.ADA: If a bound in a non-null range of a non-null aggregate does not belong to an index subtype, then all choices may or may not be evaluated before CONSTRAINT__ERROR is raised. The DGC compiler evaluates all choices before CONSTRAINT_ERROR is raised.

- E43212B-B.ADA: This test examines whether or not all choices are evaluated before subaggregates are checked for identical bounds. The DGC compiler evaluates all subaggregates first.

- E52103Y-B.ADA, C52104X-B.ADA, C52104y-B.ADA: These tests declare BOOLEAN arrays with INTEGER'LAST+3 components. An implementation may raise NUMERIC_ERROR at the type declaration or STORAGE__ERROR when array objects of these types are declared, or it may accept the type and object declarations. The DGC compiler raised NUMERIC__ERROR for null array with one dimension of length greater than INTEGER'LAST in E52103Y-B.

- A series of tests (D55A03*-AB.ADA) checks to see what level of loop nesting is allowed by an implementation. Tests containing up to 65 nested loops passed without exceeding the implementation's capacity.

- D56001B-AB.ADA contains blocks nested 65 levels deep. This test was passed.

- C94004A-B.ADA: This test checks to see what happens when a library unit initiates a task and a main program terminates without ensuring that the library unit's task is terminated. An implementation is allowed to terminate the library unit task or it is allowed to leave the task in execution. This test showed that such library tasks do terminate when the main program terminates.

- CA1012A4M-B.DEP: This test checks whether an implementation requires generic library unit bodies to be compiled in the same compilation as the generic declaration. The DGC compiler does allow generic declarations and bodies to be compiled in completely separate compilations.

- BC3204C*-B.ADA and BC3205D*-B.ADA: These tests contain a separately compiled generic declaration, some instantiations, and a body. An implementation must reject either the instantiations or the body. The DGC compiler generated errors when compiling the generic package body.

- CE2106A-B.DEP and CE3110A-B.DEP: These tests confirm that dynamic creation and deletion of files is supported.

- CE2107*.DEP: These tests showed that more than one internal file may be associated with the same external file.

- CE2110B-B.DEP: This test confirmed that an external file associated with more than one internal file can be deleted.

- EE3102C-B.ADA: This test confirmed that an Ada program can open an existing file in OUT_FILE mode, and can create an existing file in either OUT_FILE or IN_FILE mode.

- CE3111A-B.DEP showed that two internal files may read the same external file.

- CE3111B-B.DEP and CE3111C-B.DEP showed that the DGC compiler does allow two internal TEXT_IO files to be associated with the same external file when one or both internal files are opened for writing.

5. SUMMARY AND CONCLUSIONS

The Ada Validation Facility (AVF) identified 2050 of the ACVC version 1.5 tests as being being potentially applicable to the validation of the Data General Corporation compiler hosted on the Eclipse MV10000SX, MV/10000, MV/4000, MV/8000C, and the MV/8000II. Of these, 66 were withdrawn due to test errors, and 171 were determined to be inapplicable before they were processed. The compiler passed the remaining 1813 tests.

The AVF considers these results to show acceptable compliance to the February 1983 ANSI Ada Reference Manual.

END

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